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COMPARISON OF THEORY AND EXPERIMENT FOR VENTED HYDROFOILS

Part 2. TABLES

By
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ABSTRACT. Part 2 of this report presents 20 tables of mathematical functions required in the theoretical calculations of steady, plane, unbounded flow about vented hydrofoils, for which analysis is given in Part 1, bound separately. The tables are in four groups. For the special case of infinite cavity length and zero cavity number, Tables 1 through 4 allow the calculation of C_D, C_L, and C_M for a wide class of profiles whose contour slope distributions can be expressed as polynomials in chordwise position. Tables 5 through 9 are the ones used in the planimeter integrations described in Part 1 to obtain the key smooth-entry parameters for various cavity lengths and exhaust positions. Tables 10 through 14 are auxiliary functions required in the calculations. Tables 15 through 20 are the flat-plate solution parameters with which the angle of attack is adjusted for an arbitrary profile.

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FOREWORD

As one of a series on vented hydrofoils, this report, consisting of two parts, completes the application of linearized theory for steady, plane, unbounded flow. The general study is motivated by the possible use of gas exhaust for torpedo-control purposes and the use of base-vented hydrofoils as propeller blades.

The theoretical calculations for the two vented profiles given in Part 1 required calculation of various functions that are independent of hydrofoil profile, and dependent only on exhaust location and cavity length. The tables of these functions are presented here in Part 2 so that others may consider further profiles with minimal labor.

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GENERAL NOTE

The tables in this Part 2 are in four groups. Tables 1 through 4 give functions convenient for treating C_D, C_L, and C_M for a broad class of profiles for $\ell = \infty$. Tables 5 through 8 give the functions F_1, F_2, F_3, and F_4 that are multiplied by a profile's wetted contour slope distribution and then integrated to obtain the profile's key parameters (neglecting moment) of α_s, u_{c_s}, t_{w_s}, and C_{L_s}. These integrations are for nine values of ℓ from ∞ to 1.1. Table 9 gives $x(\theta)$ which is used to transfer the profile slope to the unit circle for the integrations. Auxiliary tables useful in the calculations and in possible future work are Tables 10 through 14. Tables 15 through 20 allow calculation of C_D, C_L, and K versus ℓ for the arbitrary profile at arbitrary attack angle.

Tables 1 and 2 were calculated using

$$I_n = \int_0^{\theta'} \left(\frac{\cos\theta - a}{1 + a} \right)^n d\theta, \quad a = \cos\theta'$$

$$= \left(\frac{a}{1 + a} \right)^n \left[i_n - \frac{n}{1!} i_{n-1} + \frac{n(n-1)}{2!} i_{n-2} - \cdots + (-1)^n i_0 \right]$$

and the corresponding formula for J_n in terms of j_n, with

$$i_n = \frac{1}{a^n} \int_0^{\theta'} \cos^n\theta \, d\theta, \quad j_n = \frac{1}{a^n} \int_{\theta'}^{\pi} \cos^n\theta \, d\theta$$

The i_n and j_n were obtained from

$$i_0 = \theta', \quad i_1 = \tan\theta', \quad i_2 = \frac{1}{2} \tan\theta' + \frac{\theta'}{2a^2}$$

$$i_n = \frac{1}{n} \tan\theta' + \frac{(n-1)}{na^2} i_{n-2}$$

$$j_n = -i_n, \quad n \text{ odd}$$

$$= -i_n + \frac{\pi}{a^n} \left[\frac{1 \cdot 3 \cdot 5 \cdots (n-1)}{2 \cdot 4 \cdot 6 \cdots n} \right], \quad n \text{ even}$$

The correspondence between the e and θ' values is

e	0	0.025	0.05	0.1	0.2	0.3	0.4
θ'	0	0.75693	0.88342	1.02453	1.17862	1.27425	1.34370

e	0.5	0.6	0.7	0.8	0.9	1.0
θ'	1.39837	1.44344	1.48175	1.51504	1.54445	1.57080

plus e = 0.00516 and 0.01754 for θ' = 30 and 40 degrees, respectively.

These hand-computed tables have not been subject to careful checking, and graphical checks for smoothness have been made on only about half of them. Only routine attention to the number of significant figures was given during the course of the calculations. Typically, the last figure is probably wrong and in some "corners" of the tables, greater loss in significant figures occurs. Nevertheless, the tables are reproduced here just as used in the calculations, so that for only the minor cost of a few pages of printing the maximum value may be obtained from the work done.

TABLE 1. $I_n = \int_0^{\theta'} \left(\frac{\cos\theta - \cos\theta'}{1 + \cos\theta'} \right)^n d\theta$

e	I_0	I_1	I_2	I_3	I_4	I_5
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00516	0.52360	0.02570	0.00143	0.00009	0.00000	0.00000
0.01754	0.69813	0.06115	0.00646	0.00073	0.00009	0.00001
0.02500	0.75693	0.07985	0.00995	0.00135	0.00027	0.00004
0.05000	0.88342	0.12993	0.02311	0.00441	0.00088	0.00018
0.10000	1.02453	0.21207	0.05324	0.01437	0.00440	0.00116
0.20000	1.17862	0.34298	0.12135	0.04635	0.01828	0.00749
0.30000	1.27425	0.45193	0.19567	0.09127	0.04426	0.02198
0.40000	1.34370	0.54834	0.27376	0.14735	0.08247	0.04727
0.50000	1.39837	0.63611	0.35466	0.21330	0.13342	0.08549
0.60000	1.44344	0.71743	0.43776	0.28825	0.19746	0.13857
0.70000	1.48175	0.79368	0.52263	0.36952	0.27539	0.20682
0.80000	1.51504	0.86577	0.60898	0.46267	0.36578	0.29630
0.90000	1.54445	0.93437	0.69664	0.56116	0.47047	0.40416
1.00000	1.57080	1.00000	0.78540	0.66667	0.58905	0.53333

e	I_6	I_7	I_8	I_9	I_{10}
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00516	0.00000	0.00000	0.00000	0.00000	0.00000
0.01754	0.00000	0.00000	0.00000	0.00000	0.00000
0.02500	0.00000	0.00000	0.00000	0.00000	0.00000
0.05000	0.00004	0.00000	0.00000	0.00000	0.00000
0.10000	0.00034	0.00010	0.00003	0.00000	0.00000
0.20000	0.00302	0.00132	0.00050	0.00027	0.00006
0.30000	0.01109	0.00566	0.00292	0.00151	0.00079
0.40000	0.02751	0.01613	0.00961	0.00581	0.00344
0.50000	0.05567	0.03668	0.02437	0.01116	0.01097
0.60000	0.09883	0.07131	0.05179	0.03810	0.02804
0.70000	0.16104	0.12389	0.09892	0.07505	0.06256
0.80000	0.24397	0.20323	0.17108	0.14457	0.12300
0.90000	0.35293	0.31183	0.27795	0.24948	0.22512
1.00000	0.49087	0.45714	0.42952	0.40610	0.38656

TABLE 2. $J_n = \int_{\theta'}^{\pi} \left(\frac{\cos\theta - \cos\theta'}{1 + \cos\theta'} \right)^n d\theta$

e	J_0	J_1	J_2	J_3	J_4	J_5
0.00000	3.14159	-1.57080	1.17810	-0.98175	0.85903	-0.77313
0.00516	2.61800	-1.48297	1.12635	-0.94221	0.82590	-0.74406
0.01754	2.44346	-1.42385	1.08827	-0.91396	0.80079	-0.72170
0.02500	2.38466	-1.40228	1.07341	-0.90080	0.79087	-0.71318
0.05000	2.25817	-1.34949	1.03827	-0.87292	0.76714	-0.69219
0.10000	2.11706	-1.28613	0.99430	-0.83771	0.73664	-0.66548
0.20000	1.96297	-1.21129	0.94112	-0.79467	0.70003	-0.63258
0.30000	1.86734	-1.16236	0.90569	-0.76579	0.67511	-0.61036
0.40000	1.79789	-1.12567	0.87884	-0.74380	0.65608	-0.59336
0.50000	1.74322	-1.09619	0.85713	-0.72595	0.64061	-0.57953
0.60000	1.69815	-1.07149	0.83883	-0.71088	0.62752	-0.56781
0.70000	1.65984	-1.05025	0.82309	-0.69581	0.61564	-0.55619
0.80000	1.62655	-1.03160	0.80911	-0.68631	0.60616	-0.54868
0.90000	1.59714	-1.01498	0.79665	-0.67600	0.59718	-0.54063
1.00000	1.57080	-1.00000	0.78540	-0.66667	0.58905	-0.53333

e	J_6	J_7	J_8	J_9	J_{10}
0.00000	0.70870	-0.65808	0.61695	-0.58268	0.55354
0.00516	0.68250	-0.63404	0.59461	-0.56172	0.53375
0.01754	0.66252	-0.61567	0.57753	-0.54568	0.51858
0.02500	0.65459	-0.60838	0.57075	-0.53930	0.51255
0.05000	0.63523	-0.58995	0.55299	-0.52231	0.49643
0.10000	0.61134	-0.56853	0.53361	-0.50441	0.47952
0.20000	0.58142	-0.54070	0.50784	-0.48016	0.45655
0.30000	0.56119	-0.52224	0.49039	-0.46373	0.44099
0.40000	0.54572	-0.50794	0.47703	-0.45115	0.42906
0.50000	0.53308	-0.49623	0.46609	-0.44084	0.41928
0.60000	0.52238	-0.48633	0.45682	-0.43210	0.41099
0.70000	0.51251	-0.47660	0.44818	-0.42358	0.40321
0.80000	0.50491	-0.47014	0.44168	-0.41779	0.39746
0.90000	0.49754	-0.46332	0.43530	-0.41180	0.39174
1.00000	0.49087	-0.45714	0.42952	-0.40610	0.38656

TABLE 3. $P_n = I_n + J_n$

e	P_1	P_2	P_3	P_4	P_5
0.00000	-1.57080	1.17810	-0.98175	0.85903	-0.77313
0.00516	-1.45727	1.12778	-0.94213	0.82591	-0.74406
0.01754	-1.36271	1.09473	-0.91177	0.80088	-0.72169
0.02500	-1.32243	1.08337	-0.89945	0.79105	-0.71315
0.05000	-1.21956	1.06138	-0.86851	0.76802	-0.69202
0.10000	-1.07407	1.04754	-0.82333	0.74104	-0.66432
0.20000	-0.86831	1.06247	-0.74831	0.71831	-0.62509
0.30000	-0.71044	1.10136	-0.67452	0.71937	-0.58838
0.40000	-0.57734	1.15260	-0.59645	0.73855	-0.54609
0.50000	-0.46008	1.21179	-0.51265	0.74403	-0.49404
0.60000	-0.35406	1.27658	-0.42262	0.82498	-0.42924
0.70000	-0.25657	1.34566	-0.32628	0.89102	-0.34937
0.80000	-0.16583	1.41809	-0.22364	0.97195	-0.25238
0.90000	-0.08061	1.49329	-0.11484	1.06765	-0.13647
1.00000	0.00000	1.57080	0.00000	1.17810	0.00000

e	P_6	P_7	P_8	P_9	P_{10}
0.00000	0.70870	-0.65808	0.61695	-0.58268	0.55354
0.00516	0.68250	-0.63404	0.59461	-0.56172	0.53375
0.01754	0.66252	-0.61567	0.57753	-0.54568	0.51858
0.02500	0.65459	-0.60837	0.57074	-0.53930	0.51255
0.05000	0.63561	-0.59087	0.55444	-0.52399	0.49806
0.10000	0.61167	-0.56844	0.53364	-0.50440	0.47952
0.20000	0.58444	-0.53960	0.50834	-0.47990	0.45662
0.30000	0.57228	-0.51658	0.49331	-0.46222	0.44178
0.40000	0.57323	-0.49167	0.48664	-0.44534	0.43250
0.50000	0.58875	-0.45956	0.49046	-0.42452	0.43025
0.60000	0.62121	-0.41634	0.50874	-0.39402	0.43904
0.70000	0.67355	-0.35271	0.54710	-0.34853	0.46576
0.80000	0.74887	-0.26690	0.61250	-0.27325	0.52046
0.90000	0.85047	-0.15149	0.71322	-0.16233	0.61688
1.00000	0.98175	0.00000	0.85903	0.00000	0.77313

TABLE 4. $M_n = I_n - J_n$

e	M_0	M_1	M_2	M_3	M_4	M_5
0.00000	-3.14159	1.57080	-1.17810	0.98175	-0.85903	0.77313
0.00516	-2.09440	1.50867	-1.12492	0.94230	-0.82590	0.74406
0.01754	-1.74533	1.48500	-1.08181	0.91469	-0.80070	0.72170
0.02500	-1.62773	1.48213	-1.06346	0.90215	-0.79060	0.71322
0.05000	-1.37475	1.47942	-1.01516	0.87733	-0.76626	0.69237
0.10000	-1.09253	1.49820	-0.97993	0.85208	-0.73224	0.66664
0.20000	-0.78435	1.55427	-0.81977	0.84102	-0.68175	0.64007
0.30000	-0.59309	1.61429	-0.71002	0.85706	-0.63085	0.63234
0.40000	-0.45419	1.67401	-0.60508	0.89115	-0.57361	0.64063
0.50000	-0.34485	1.73230	-0.50247	0.93925	-0.50719	0.66502
0.60000	-0.25471	1.78892	-0.40107	0.99913	-0.43006	0.70638
0.70000	-0.17809	1.84393	-0.30046	1.06533	-0.34025	0.76301
0.80000	-0.11151	1.89737	-0.20013	1.14898	-0.24038	0.84498
0.90000	-0.05269	1.94935	-0.10001	1.23716	-0.12671	0.94479
1.00000	0.00000	2.00000	0.00000	1.33333	0.00000	1.06666

e	M_6	M_7	M_8	M_9	M_{10}
0.00000	-0.70870	0.65808	-0.61695	0.58268	-0.55354
0.00516	-0.68250	0.63404	-0.59461	0.56172	-0.53375
0.01754	-0.66252	0.61567	-0.57753	0.54568	-0.51858
0.02500	-0.65459	0.60838	-0.57075	0.53930	-0.51255
0.05000	-0.63519	0.58995	-0.55299	0.52231	-0.49643
0.10000	-0.61100	0.56863	-0.53358	0.50441	-0.47952
0.20000	-0.58010	0.54202	-0.50734	0.48043	-0.45649
0.30000	-0.55010	0.52790	-0.48747	0.46524	-0.44020
0.40000	-0.51821	0.52407	-0.46742	0.45696	-0.42562
0.50000	-0.47741	0.53291	-0.44172	0.45200	-0.40831
0.60000	-0.42355	0.55764	-0.40503	0.47020	-0.38295
0.70000	-0.35147	0.60049	-0.32706	0.49863	-0.34065
0.80000	-0.26094	0.67337	-0.27060	0.56236	-0.27446
0.90000	-0.14461	0.77515	-0.15735	0.66128	-0.16662
1.00000	0.00000	0.91428	0.00000	0.81220	0.00000

TABLE 5. F_1 for e = 0.3

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.28107	0.41087	0.54607	0.63676	0.81083	1.01082	1.24228	1.32467
10	0	0.27731	0.40573	0.54018	0.63738	0.80489	1.00586	1.23922	1.32255
20	0	0.26546	0.38982	0.52119	0.61024	0.78255	0.98122	1.20978	1.29041
30	0	0.24582	0.36270	0.48768	0.57302	0.73841	0.92617	1.13148	1.19928
40	0	0.21844	0.32358	0.43681	0.51408	0.66092	0.81508	0.94821	0.97719
50	0	0.18362	0.27209	0.36641	0.42900	0.53861	0.62262	0.63152	0.57378
60	0	0.14206	0.20881	0.27607	0.31633	0.36745	0.34720	0.17138	0.07040
70	0	0.09525	0.13455	0.16907	0.18093	0.16081	0.03179	-0.23113	-0.33855
80	0	0.04477	0.05655	0.05286	0.03507	-0.04976	-0.23324	-0.48326	-0.55857
90	0	-0.00707	-0.02404	-0.06236	-0.10499	-0.23021	-0.41618	-0.59380	-0.63423
100	0	-0.05796	-0.10101	-0.16682	-0.22520	-0.36200	-0.51525	-0.62007	-0.63627
110	0	-0.10575	-0.17019	-0.25395	-0.31852	-0.44581	-0.55673	-0.60769	-0.60955
120	0	-0.14858	-0.22895	-0.32155	-0.38057	-0.49280	-0.56590	-0.58169	-0.57554
130	0	-0.18546	-0.27632	-0.37085	-0.42934	-0.51571	-0.55995	-0.55380	-0.54325
140	0	-0.21553	-0.31265	-0.40498	-0.45705	-0.52462	-0.54839	-0.52896	-0.51605
150	0	-0.23880	-0.33897	-0.42739	-0.47346	-0.52646	-0.53649	-0.50913	-0.49496
160	0	-0.25518	-0.35661	-0.44122	-0.48257	-0.52543	-0.52681	-0.49665	-0.48007
170	0	-0.26490	-0.36675	-0.44867	-0.49021	-0.52415	-0.52082	-0.48654	-0.47141
180	0	-0.26802	-0.36997	-0.45089	-0.48837	-0.52339	-0.51855	-0.48356	-0.46834

TABLE 5 (Contd.). F_1 for e = 0.4

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.29525	0.42933	0.56681	0.65761	0.82924	1.02391	1.24854	1.32865
10	0	0.29128	0.42432	0.56146	0.65247	0.82526	1.02223	1.25068	1.33252
20	0	0.27921	0.40866	0.54392	0.63761	0.80845	1.00778	1.23867	1.32102
30	0	0.25905	0.38176	0.51242	0.60132	0.77337	0.97040	1.19268	1.26902
40	0	0.23077	0.34248	0.46349	0.54665	0.70705	0.88280	1.05364	1.10002
50	0	0.19460	0.29005	0.39385	0.46447	0.59424	0.72983	0.74977	0.72607
60	0	0.14784	0.25054	0.30190	0.35108	0.42465	0.43510	0.28028	0.17610
70	0	0.10192	0.14800	0.19000	0.20950	0.20622	0.09330	-0.19802	-0.32420
80	0	0.04855	0.06391	0.06566	0.05202	-0.02793	-0.22343	-0.51460	-0.60593
90	0	-0.00649	-0.02243	-0.05966	-0.10247	-0.23462	-0.44380	-0.65354	-0.70193
100	0	-0.06065	-0.10530	-0.17417	-0.23636	-0.38663	-0.56189	-0.68458	-0.70341
110	0	-0.11151	-0.17797	-0.26967	-0.32086	-0.48193	-0.60889	-0.66774	-0.66972
120	0	-0.25260	-0.26631	-0.34319	-0.41300	-0.53351	-0.61700	-0.63521	-0.62818
130	0	-0.19624	-0.29355	-0.39611	-0.46046	-0.55700	-0.60754	-0.60125	-0.58956
140	0	-0.22811	-0.33212	-0.43212	-0.48932	-0.56474	-0.59230	-0.57161	-0.55761
150	0	-0.25260	-0.35970	-0.45536	-0.50580	-0.56491	-0.57729	-0.54823	-0.53292
160	0	-0.26981	-0.37809	-0.46936	-0.51457	-0.56241	-0.56537	-0.53161	-0.51569
170	0	-0.28002	-0.38860	-0.47686	-0.51884	-0.56020	-0.55481	-0.52191	-0.50571
180	0	-0.28336	-0.39192	-0.47905	-0.51989	-0.55907	-0.55530	-0.50511	-0.50218

TABLE 5 (Contd.). F_1 for e = 0.5

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.30749	0.44500	0.58218	0.67370	0.84090	1.02759	1.24217	1.35041
10	0	0.30346	0.44006	0.57888	0.66918	0.83870	1.02876	1.24871	1.36077
20	0	0.29122	0.42494	0.56291	0.65435	0.82732	1.02367	1.25185	1.37089
30	0	0.27069	0.39843	0.53375	0.62529	0.80150	1.00361	1.23676	1.36099
40	0	0.24174	0.35936	0.48735	0.57565	0.74765	0.94187	1.14775	1.25279
50	0	0.20449	0.30645	0.41938	0.48928	0,64770	0.79849	0.89638	1.08794
60	0	0.15955	0.23947	0.32702	0.38570	0.48491	0.53605	0.42646	0.53898
70	0	0.10813	0.15989	0.21146	0.23998	0.25950	0.17121	-0.13030	-0.46077
80	0	0.05220	0.07146	0.07990	0.07217	0.00307	-0.19673	-0.53283	-0.69548
90	0	-0.00573	-0.02017	-0.05506	-0.09663	-0.23222	-0.46429	-0.71412	-0.80513
100	0	-0.06288	-0.10860	-0.17959	-0.24476	-0.40774	-0.60826	-0.75435	-0.79420
110	0	-0.11658	-0.18826	-0.28359	-0.35950	-0.51681	-0.66306	-0.73333	-0.74431
120	0	-0.16473	-0.25556	-0.36315	-0.43938	-0.57405	-0.67056	-0.69345	-0.68922
130	0	-0.20589	-0.30922	-0.41978	-0.49028	-0.59844	-0.65744	-0.65260	-0.64054
140	0	-0.23936	-0.34975	-0.45768	-0.52035	-0.60498	-0.63815	-0.61748	-0.60138
150	0	-0.26498	-0.37866	-0.48165	-0.53688	-0.60340	-0.61971	-0.59008	-0.57190
160	0	-0.28294	-0.39774	-0.49585	-0.54527	-0.59933	-0.60531	-0.57074	-0.55154
170	0	-0.29358	-0.40852	-0.50331	-0.54904	-0.59612	-0.59656	-0.55953	-0.53983
180	0	-0.29706	-0.41199	-0.50641	-0.55007	-0.59460	-0.59328	-0.55551	-0.53571

TABLE 6. F_2 for e = 0.3

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	1	0.98438	0.97043	0.95544	0.94783	0.94433	0.96312	1.01282	1.03618
10	1	0.98687	0.97474	0.96282	0.96785	0.95991	0.98742	1.05086	1.08031
20	1	0.99258	0.98656	0.98326	0.98513	1.00363	1.05556	1.15759	1.20403
30	1	1.00128	1.00510	1.01572	1.02911	1.07523	1.16965	1.33974	1.41619
40	1	1.01171	1.02792	1.05640	1.08475	1.16727	1.31739	1.57075	1.68044
50	1	1.02289	1.05185	1.09937	1.14391	1.26457	1.46616	1.76195	1.88296
60	1	1.03257	1.07297	1.13699	1.19472	1.34186	1.55843	1.80562	1.86664
70	1	1.03953	1.08751	1.16061	1.22384	1.37059	1.54019	1.64038	1.63427
80	1	1.04201	1.09147	1.16347	1.22115	1.33525	1.41535	1.36822	1.31828
90	1	1.03953	1.08391	1.14316	1.18487	1.24450	1.23191	1.10122	1.03876
100	1	1.03208	1.06509	1.10261	1.12227	1.12409	1.04607	0.88726	0.82762
110	1	1.02040	1.03744	1.04882	1.04560	1.00003	0.88694	0.72915	0.67676
120	1	1.00550	1.00459	0.98988	0.96697	0.88863	0.76173	0.61567	0.57048
130	1	0.98910	0.97044	0.93284	0.89489	0.79674	0.66748	0.53499	0.49572
140	1	0.97321	0.93845	0.88261	0.83419	0.72528	0.59872	0.47815	0.44333
150	1	0.95930	0.91130	0.84206	0.78691	0.67273	0.55026	0.43895	0.40733
160	1	0.94837	0.89080	0.81265	0.75343	0.63702	0.51822	0.41337	0.38387
170	1	0.94141	0.87824	0.79502	0.73829	0.61652	0.50016	0.39905	0.37075
180	1	0.93868	0.87383	0.78891	0.72696	0.60957	0.49408	0.39424	0.36634

TABLE 6 (Contd.). F_2 for e = 0.4

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	1	0.97714	0.95452	0.92841	0.91239	0.89196	0.89188	0.92163	0.93833
10	1	0.97950	0.95934	0.93649	0.92296	0.90807	0.91589	0.95788	0.97996
20	1	0.98594	0.97263	0.95896	0.95259	0.95368	0.98460	1.06235	1.10018
30	1	0.99599	0.99367	0.99514	1.00095	1.03016	1.10321	1.24848	1.31653
40	1	1.00833	1.01996	1.04145	1.06379	1.13250	1.26607	1.50657	1.61533
50	1	1.02134	1.04812	1.09202	1.13340	1.24778	1.44771	1.77035	1.90195
60	1	1.03314	1.07389	1.13861	1.19731	1.35010	1.58797	1.89109	1.98208
70	1	1.04187	1.09264	1.17115	1.23983	1.40452	1.61274	1.76346	1.76986
80	1	1.04594	1.10038	1.18111	1.24742	1.38558	1.49960	1.47197	1.41983
90	1	1.02197	1.09490	1.16444	1.21558	1.29686	1.30272	1.16752	1.09815
100	1	1.03717	1.07643	1.12376	1.15132	1.16748	1.09410	0.92288	0.85706
110	1	1.02500	1.04768	1.06676	1.06896	1.03029	0.91458	0.74491	0.68815
120	1	1.00934	1.01268	1.00305	0.98307	0.90657	0.77462	0.61953	0.57154
130	1	0.99200	0.97590	0.94098	0.90409	0.80498	0.67069	0.53193	0.49093
140	1	0.97486	0.94130	0.88631	0.83774	0.72660	0.59580	0.47107	0.43523
150	1	0.95969	0.91190	0.84223	0.78622	0.66945	0.54360	0.42956	0.39735
160	1	0.94783	0.88972	0.81031	0.74990	0.63085	0.50936	0.40267	0.37286
170	1	0.94041	0.87613	0.79125	0.72862	0.60883	0.48730	0.38770	0.34929
180	1	0.93778	0.87136	0.78465	0.72130	0.60136	0.48370	0.37285	0.35466

TABLE 6 (Contd.). F_2 for e = 0.5

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	1	0.96983	0.93919	0.89997	0.87798	0.84090	0.82227	0.83252	0.83479
10	1	0.97245	0.94426	0.91084	0.88862	0.85706	0.84533	0.86603	0.87448
20	1	0.97962	0.95905	0.93496	0.92027	0.90342	0.91239	0.96438	0.99180
30	1	0.99088	0.98230	0.97427	0.97202	0.98266	1.03118	1.14586	1.21342
40	1	1.00480	1.01173	1.02544	1.04145	1.09235	1.20256	1.41680	1.55139
50	1	1.01965	1.04385	1.08299	1.11978	1.22292	1.41064	1.17378	1.94146
60	1	1.03339	1.07408	1.13818	1.19635	1.34978	1.60104	1.95902	2.14511
70	1	1.04393	1.09721	1.17991	1.25293	1.43311	1.68014	1.90049	1.95529
80	1	1.04946	1.10860	1.19759	1.27232	1.43600	1.59165	1.60053	1.53991
90	1	1.04887	1.10538	1.18538	1.24655	1.35340	1.38654	1.25299	1.15250
100	1	1.04196	1.08756	1.14513	1.18170	1.21619	1.15349	0.97026	0.87170
110	1	1.02955	1.05787	1.08536	1.09401	1.06530	0.94956	0.76754	0.68245
120	1	1.01315	0.02088	1.01709	1.00085	0.92811	0.79233	0.62759	0.55603
130	1	0.99480	0.89163	0.95005	0.91480	0.81591	0.67713	0.53161	0.47083
140	1	0.97657	0.94455	0.89085	0.84217	0.73006	0.59523	0.46596	0.41309
150	1	0.96036	0.91300	0.84329	0.78680	0.66792	0.53878	0.42172	0.37435
160	1	0.94772	0.88921	0.80892	0.74762	0.62627	0.50208	0.39330	0.34954
170	1	0.93978	0.87450	0.78846	0.72451	0.60262	0.48160	0.37758	0.33582
180	1	0.93695	0.86953	0.78285	0.71687	0.59460	0.47474	0.37231	0.33124

TABLE 7. F_3 for e = 0.3

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.05499	0.10094	0.19413	0.25102	0.38285	0.54708	0.75874	0.84053
10	0	0.05030	0.10504	0.18026	0.23018	0.35653	0.50860	0.70056	0.77337
20	0	0.03822	0.08043	0.13901	0.17916	0.27235	0.37619	0.47901	0.50730
30	0	0.01924	0.04074	0.07013	0.08627	0.11840	0.11387	-0.00135	-0.08770
40	0	-0.00416	0.01054	-0.02343	-0.04421	-0.11379	-0.31206	-0.82279	-1.10895
50	0	-0.02992	-0.06799	-0.13197	-0.20012	-0.40395	-0.84708	-1.70564	-2.14155
60	0	-0.05377	-0.12269	-0.23727	-0.35166	-0.67584	-1.25812	-2.02559	-2.20053
70	0	-0.07230	-0.16440	-0.31376	-0.45436	-0.81090	-1.25679	-1.39569	-1.26521
80	0	-0.08181	-0.18281	-0.33838	-0.47018	-0.73605	-0.86020	-0.49258	-0.26224
90	0	-0.08066	-0.17428	-0.30309	-0.39251	-0.51099	-0.34440	0.13991	0.32323
100	0	-0.06874	-0.13999	-0.21946	-0.25139	-0.20715	0.06020	0.45670	0.57269
110	0	-0.04786	-0.08719	-0.10937	-0.09136	0.03972	0.30715	0.58114	0.64912
120	0	-0.02084	-0.02574	-0.00132	0.04962	0.21437	0.43428	0.61312	0.65228
130	0	0.00866	0.03512	0.09759	0.16642	0.32429	0.49215	0.60695	0.62961
140	0	0.03668	0.08892	0.17299	0.24738	0.38810	0.51350	0.58823	0.60162
150	0	0.06110	0.13170	0.22722	0.30089	0.42292	0.51806	0.56849	0.57664
160	0	0.07955	0.16237	0.26288	0.33384	0.44072	0.51624	0.55502	0.55785
170	0	0.09117	0.18055	0.28280	0.35178	0.44907	0.51370	0.54279	0.54660
180	0	0.09515	0.18665	0.28924	0.35685	0.45120	0.51242	0.53921	0.54257

TABLE 7 (Contd.). F_3 for e = 0.4

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.06618	0.14452	0.22967	0.30000	0.44602	0.62647	0.85472	0.94243
10	0	0.06152	0.13544	0.21571	0.35271	0.42300	0.59653	0.81480	0.89818
20	0	0.04862	0.10896	0.17375	0.23334	0.34695	0.48726	0.64636	0.70007
30	0	0.02719	0.06570	0.10216	0.13590	0.20158	0.25602	0.24260	0.20391
40	0	0.00060	0.00855	0.00189	-0.00150	-0.03256	-0.15965	-0.56170	-0.80952
50	0	-0.02854	-0.05684	-0.11932	-0.17503	-0.35163	-0.73849	-1.14363	-2.16068
60	0	-0.05721	-0.10912	-0.24329	-0.35645	-0.57702	-1.34208	-2.36667	-2.68901
70	0	-0.07817	-0.17297	-0.34070	-0.49496	-0.90932	-1.46112	-1.84821	-1.74913
80	0	-0.09046	-0.20029	-0.38193	-0.51362	-0.88072	-1.11511	-0.75405	-0.48047
90	0	-0.09033	-0.19645	-0.35236	-0.46712	-0.62680	-0.50011	0.06401	0.28677
100	0	-0.07863	-0.16230	-0.26233	-0.31293	-0.28959	0.00285	0.46872	0.60502
110	0	-0.05745	-0.10659	-0.13971	-0.14446	0.00513	0.30601	0.62057	0.70425
120	0	-0.03073	-0.02683	-0.01413	0.03560	0.21174	0.45799	0.65560	0.69702
130	0	0.00542	0.02803	0.09482	0.16486	0.33856	0.52292	0.64495	0.66757
140	0	0.03643	0.08702	0.17929	0.25564	0.40980	0.50704	0.62072	0.63329
150	0	0.06316	0.13382	0.23938	0.31475	0.44712	0.54692	0.59722	0.60322
160	0	0.08354	0.16714	0.27835	0.35041	0.46533	0.54301	0.57715	0.58106
170	0	0.09611	0.18682	0.29997	0.36921	0.47829	0.53552	0.56546	0.56852
180	0	0.10044	0.19338	0.30691	0.37500	0.47542	0.53720	0.54368	0.56320

TABLE 7 (Contd.). F_3 for e = 0.5

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.07700	0.15798	0.26383	0.34152	0.50000	0.70460	0.92495	1.06340
10	0	0.07196	0.14874	0.24959	0.32541	0.48074	0.68413	0.90226	1.04257
20	0	0.05758	0.12443	0.20777	0.27468	0.41484	0.60312	0.78824	0.91555
30	0	0.03471	0.07562	0.13497	0.18263	0.28337	0.41799	0.48211	0.53305
40	0	0.00154	0.01459	0.03016	0.04165	0.05770	0.04740	-0.23056	-0.44304
50	0	-0.02683	-0.05674	-0.10172	-0.15180	-0.27804	-0.56916	-1.47739	-2.17058
60	0	-0.05806	-0.12888	-0.24317	-0.35232	-0.67769	-1.30038	-2.62218	-3.38265
70	0	-0.08340	-0.18865	-0.36248	-0.52795	-0.98981	-1.67808	-2.40527	-2.28301
80	0	-0.09838	-0.22248	-0.42282	-0.60346	-1.03179	-1.35381	-1.13067	-0.70639
90	0	-0.10010	-0.22145	-0.40208	-0.54454	-0.77778	-0.64448	-0.06003	0.31999
100	0	-0.08802	-0.18564	-0.30807	-0.37906	-0.38975	-0.02467	0.47112	0.70271
110	0	-0.06422	-0.15927	-0.17282	-0.17300	-0.03952	0.34646	0.66280	0.78940
120	0	-0.03256	-0.05106	-0.03219	0.01662	0.20498	0.52395	0.70315	0.77083
130	0	0.00226	0.02488	0.08979	0.16331	0.35172	0.59349	0.68759	0.72408
140	0	0.03589	0.09015	0.18368	0.26524	0.43150	0.61186	0.65686	0.67686
150	0	0.06489	0.14175	0.24957	0.32979	0.47166	0.60953	0.62699	0.63819
160	0	0.08689	0.17825	0.29187	0.36825	0.49028	0.60148	0.60394	0.61051
170	0	0.10050	0.19976	0.31506	0.38823	0.49812	0.59497	0.59007	0.59436
180	0	0.10519	0.20683	0.32241	0.39432	0.49999	0.59214	0.58498	0.58865

TABLE 8. F_4 for e = 0.3

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.27657	0.39871	0.52429	0.59979	0.76569	0.97355	1.25821	1.37258
10	0	0.27417	0.39689	0.52489	0.62450	0.78177	1.01050	1.33401	1.46751
20	0	0.26515	0.38952	0.52474	0.61433	0.81855	1.09673	1.51060	1.68694
30	0	0.24928	0.37408	0.51973	0.61914	0.85969	1.20390	1.72751	1.94942
40	0	0.22527	0.34587	0.49436	0.60004	0.86168	1.22938	1.71584	1.87943
50	0	0.19235	0.29998	0.46963	0.53283	0.76202	1.01121	1.11271	0.95220
60	0	0.14989	0.23360	0.33592	0.39759	0.50778	0.44560	-0.18666	-0.58579
70	0	0.09961	0.14634	0.19286	0.19561	0.11888	-0.30446	-1.21796	-1.56890
80	0	0.04342	0.04897	0.02475	-0.03915	-0.28612	-0.83865	-1.50147	-1.64545
90	0	-0.01470	-0.05214	-0.13951	-0.25348	-0.57298	-1.02538	-1.30781	-1.31762
100	0	-0.07065	-0.14389	-0.27188	-0.40459	-0.69414	-0.96010	-1.00068	-0.96133
110	0	-0.12077	-0.21740	-0.35829	-0.48107	-0.68899	-0.80024	-0.73527	-0.68734
120	0	-0.16246	-0.26942	-0.40059	-0.49782	-0.62067	-0.63730	-0.54058	-0.49732
130	0	-0.19497	-0.30135	-0.41032	-0.47892	-0.53561	-0.50384	-0.40589	-0.36987
140	0	-0.21857	-0.31769	-0.40128	-0.44499	-0.45764	-0.40452	-0.31509	-0.28549
150	0	-0.23475	-0.32388	-0.38482	-0.41017	-0.39599	-0.33492	-0.25530	-0.23053
160	0	-0.24478	-0.32472	-0.36878	-0.38184	-0.35274	-0.28988	-0.21841	-0.19627
170	0	-0.25003	-0.32396	-0.35778	-0.36303	-0.32768	-0.26465	-0.19739	-0.17770
180	0	-0.25151	-0.32327	-0.35359	-0.35790	-0.31905	-0.25620	-0.19064	-0.17157

TABLE 8 (Contd.). F_4 for e = 0.4

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.28850	0.42233	0.52623	0.60000	0.73965	0.91318	1.15067	1.24671
10	0	0.28590	0.42143	0.52960	0.60788	0.75992	0.95481	1.23066	1.34523
20	0	0.27736	0.41650	0.53524	0.62833	0.80953	1.06067	1.43616	1.59806
30	0	0.26206	0.40475	0.53729	0.64367	0.87672	1.21518	1.74448	1.97696
40	0	0.23843	0.38053	0.52271	0.64327	0.92055	1.33153	1.93762	2.17515
50	0	0.20510	0.33774	0.47492	0.59541	0.87070	1.27197	1.51946	1.50646
60	0	0.15778	0.30385	0.37895	0.47148	0.64719	0.71051	0.18691	-0.23482
70	0	0.10860	0.18291	0.23091	0.26298	0.23557	-0.14112	-1.21303	-1.66935
80	0	0.04886	0.07702	0.04703	0.00139	-0.24370	-0.86871	-1.71671	-1.91563
90	0	-0.01313	-0.03372	-0.13894	-0.24913	-0.60854	-1.15628	-1.52603	-1.54164
100	0	-0.07390	-0.13540	-0.25159	-0.43045	-0.77178	-1.16491	-1.15385	-1.10513
110	0	-0.12793	-0.21499	-0.39117	-0.49749	-0.77238	-0.90924	-0.83128	-0.77313
120	0	-0.15900	-0.30047	-0.43854	-0.54235	-0.69144	-0.71301	-0.59897	-0.54813
130	0	-0.20735	-0.30896	-0.44747	-0.51873	-0.58960	-0.55423	-0.44171	-0.40059
140	0	-0.23214	-0.32579	-0.43475	-0.47783	-0.49717	-0.43801	-0.33772	-0.30474
150	0	-0.24869	-0.33119	-0.41405	-0.43632	-0.42498	-0.35794	-0.27028	-0.24319
160	0	-0.25878	-0.33102	-0.39420	-0.40306	-0.37488	-0.30669	-0.22842	-0.20525
170	0	-0.26416	-0.32948	-0.38092	-0.38243	-0.34609	-0.27330	-0.20584	-0.17068
180	0	-0.26573	-0.32850	-0.37589	-0.37500	-0.33620	-0.26860	-0.18335	-0.17811

TABLE 8 (Contd.). F_4 for e = 0.5

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0	0.29821	0.41793	0.52261	0.59149	0.70712	0.79047	1.03413	1.12713
10	0	0.29582	0.41749	0.53161	0.60074	0.73013	0.83360	1.11327	1.23024
20	0	0.28782	0.41493	0.54218	0.62564	0.78979	0.95012	1.32931	1.56960
30	0	0.27320	0.40622	0.52262	0.65688	0.87893	1.13790	1.69577	2.01500
40	0	0.25009	0.38545	0.54915	0.67561	0.96227	1.33573	2.07441	2.52466
50	0	0.21674	0.34540	0.51299	0.63639	0.96871	1.37303	1.97886	2.23335
60	0	0.17225	0.28012	0.42463	0.54134	0.79479	0.97264	0.74139	0.24241
70	0	0.11723	0.18816	0.27487	0.33255	0.38106	0.06389	-1.06927	-2.32970
80	0	0.05432	0.07551	0.07727	0.04750	-0.17021	-0.86387	-1.93415	-1.10913
90	0	-0.01203	-0.04460	-0.13053	-0.24091	-0.62856	-1.29306	-1.78958	-1.85582
100	0	-0.07652	-0.15595	-0.30490	-0.45633	-0.84889	-1.25515	-1.34253	-1.27659
110	0	-0.13427	-0.24551	-0.41929	-0.56753	-0.86136	-1.02568	-0.94747	-0.85989
120	0	-0.18202	-0.30753	-0.47278	-0.59100	-0.76783	-0.78704	-0.66813	-0.59107
130	0	-0.21854	-0.34363	-0.48138	-0.56260	-0.64783	-0.59681	-0.48325	-0.42148
140	0	-0.24439	-0.35999	-0.46500	-0.51356	-0.53902	-0.46025	-0.36344	-0.31445
150	0	-0.26133	-0.36405	-0.43985	-0.46534	-0.45521	-0.36778	-0.28702	-0.24719
160	0	-0.27149	-0.36232	-0.41643	-0.42671	-0.39764	-0.30913	-0.24015	-0.20636
170	0	-0.27681	-0.35947	-0.40082	-0.40253	-0.36487	-0.27713	-0.21510	-0.18460
180	0	-0.27833	-0.35824	-0.39236	-0.39433	-0.35355	-0.26648	-0.20683	-0.17745

TABLE 9. x(θ) for e = 0.3

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0.30000	0.30000	0.30000	0.30000	0.30000	0.30000	0.30000	0.30000	0.30000
10	0.28726	0.28728	0.28734	0.28720	0.28697	0.28608	0.28422	0.28097	0.27954
20	0.25105	0.25112	0.25101	0.25025	0.24919	0.24541	0.23780	0.22467	0.21898
30	0.19718	0.19688	0.19601	0.19375	0.19102	0.18215	0.16527	0.13751	0.12591
40	0.13445	0.13312	0.13085	0.12618	0.12119	0.10623	0.08044	0.03251	0.03119
50	0.07360	0.07098	0.06726	0.06050	0.05392	0.03658	0.01347	0.00000	0.00419
60	0.02585	0.02287	0.01908	0.01318	0.00843	0.00069	0.00766	0.06860	0.10879
70	0.00149	0.00053	0.00000	0.00108	0.00478	0.02579	0.09345	0.24698	0.31565
80	0.00842	0.01299	0.02032	0.03585	0.05405	0.12694	0.24727	0.44885	0.52021
90	0.05114	0.06469	0.08382	0.11905	0.15509	0.25925	0.42601	0.62243	0.68103
100	0.12997	0.15432	0.18651	0.24093	0.29174	0.41971	0.58735	0.74873	0.79176
110	0.24089	0.27504	0.31770	0.38458	0.44222	0.57142	0.71561	0.83567	0.86537
120	0.37585	0.41568	0.46305	0.53220	0.58757	0.70020	0.81114	0.89461	0.91426
130	0.52355	0.56328	0.60800	0.66940	0.71553	0.80229	0.88008	0.93461	0.94702
140	0.67068	0.70408	0.74016	0.78695	0.82031	0.87934	0.92875	0.96173	0.96908
150	0.80339	0.82648	0.85036	0.88005	0.90037	0.93476	0.96218	0.97989	0.98378
160	0.90884	0.92064	0.93250	0.94678	0.95626	0.97184	0.98387	0.99147	0.99313
170	0.97662	0.97976	0.97800	0.98673	0.98916	0.99309	0.99607	0.99793	0.99833
180	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

TABLE 9 (Contd.). $x(\theta)$ for e = 0.4

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0.40000	0.40000	0.40000	0.40000	0.40000	0.40000	0.40000	0.40000	0.40000
10	0.38447	0.38484	0.38513	0.38540	0.38545	0.38508	0.38376	0.38104	0.37980
20	0.34016	0.34130	0.34222	0.34282	0.34275	0.34078	0.33493	0.32334	0.31806
30	0.27364	0.27516	0.27617	0.27631	0.27529	0.26941	0.25486	0.22757	0.21543
40	0.19492	0.19573	0.19569	0.19377	0.19057	0.17809	0.15179	0.10748	0.08949
50	0.11621	0.11532	0.11323	0.10816	0.10223	0.08346	0.05102	0.01227	0.00344
60	0.05033	0.04785	0.04417	0.03738	0.03077	0.01448	0.00027	0.02476	0.05239
70	0.00910	0.00700	0.00455	0.00147	0.00008	0.00549	0.04701	0.17701	0.24345
80	0.00177	0.00371	0.00736	0.01639	0.02828	0.07564	0.19032	0.39303	0.46952
90	0.03377	0.04389	0.05867	0.08713	0.11765	0.21190	0.37688	0.58608	0.65058
100	0.10596	0.12700	0.15544	0.20492	0.25263	0.37830	0.55264	0.72753	0.77474
110	0.21431	0.24607	0.28647	0.35122	0.40835	0.54052	0.69354	0.82373	0.85604
120	0.35033	0.38914	0.43581	0.50522	0.56180	0.67940	0.79791	0.88800	0.90917
130	0.50188	0.54163	0.58695	0.64995	0.69788	0.78935	0.87250	0.93100	0.94427
140	0.65454	0.68869	0.72580	0.77444	0.80942	0.87193	0.92464	0.95984	0.96765
150	0.79325	0.81710	0.84197	0.87309	0.89450	0.93097	0.96016	0.97898	0.98309
160	0.90397	0.91625	0.92870	0.94372	0.95375	0.97016	0.98305	0.99111	0.99286
170	0.97535	0.97870	0.98203	0.98597	0.98854	0.99271	0.99587	0.99784	0.99826
180	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

TABLE 9 (Contd.). $x(\theta)$ for $e = 0.5$

θ	ℓ								
	∞	8	4	2.5	2	1.5	1.25	1.125	1.1
0	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000
10	0.48183	0.48258	0.48328	0.48404	0.48444	0.48551	0.48416	0.48223	0.48124
20	0.42985	0.43233	0.43466	0.43708	0.43832	0.43890	0.43577	0.42702	0.42268
30	0.35136	0.35531	0.35893	0.36250	0.36399	0.36297	0.35341	0.33056	0.31956
40	0.25747	0.26138	0.26468	0.26729	0.26738	0.26099	0.23965	0.19574	0.17580
50	0.16177	0.16380	0.16487	0.16389	0.16074	0.14588	0.10940	0.05629	0.03645
60	0.07859	0.07789	0.07596	0.07093	0.06482	0.04545	0.01554	0.00149	0.01220
70	0.02116	0.01909	0.01615	0.01113	0.00680	0.00013	0.01497	0.11068	0.17018
80	0.00000	0.00017	0.00112	0.00482	0.01100	0.04183	0.13448	0.32963	0.41000
90	0.02145	0.02858	0.03936	0.06108	0.08069	0.16667	0.32419	0.54362	0.61433
100	0.08683	0.10463	0.12912	0.17287	0.21635	0.33645	0.51440	0.70282	0.75473
110	0.19218	0.22131	0.25889	0.32037	0.37587	0.50867	0.66920	0.81001	0.84526
120	0.32858	0.36588	0.41126	0.47985	0.53676	0.65789	0.78346	0.88050	0.90338
130	0.48316	0.52251	0.56778	0.63152	0.68067	0.77603	0.86430	0.92696	0.94118
140	0.64049	0.67493	0.71264	0.76939	0.79881	0.86433	0.92024	0.95773	0.96605
150	0.78436	0.80873	0.83428	0.86648	0.88879	0.92710	0.95801	0.97796	0.98232
160	0.89970	0.91234	0.92521	0.94083	0.95131	0.96868	0.98219	0.99071	0.99255
170	0.97423	0.97770	0.98115	0.98526	0.98795	0.99233	0.99567	0.99774	0.99820
180	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

TABLE 10. $c = \Lambda \cos\lambda = R\ell$. $\zeta_\infty = R\ell . \left[a + ib + \sqrt{(a + ib)^2 - 1} \right]$

e	ℓ						
	∞	32	16	12	8	4	3
0.000	2.00000	1.99605	1.99191	1.98906	1.98318	1.96343	1.94814
0.025	1.45390	1.45725	1.46066	1.46291	1.46743	1.48094	1.48977
0.050	1.26902	1.27423	1.27947	1.28301	1.29018	1.31238	1.32779
0.100	1.03899	1.04581	1.05276	1.05748	1.06712	1.09773	1.11972
0.200	0.76393	0.77158	0.77947	0.78483	1.79591	0.83194	0.85872
0.300	0.58444	0.59182	0.59948	0.60472	0.61557	0.65153	0.67886
0.400	0.45030	0.45699	0.46391	0.46871	0.47864	0.51206	0.53798
0.500	0.34315	0.34891	0.35489	0.35903	0.36770	0.39719	0.42046
0.600	0.25403	0.25874	0.26364	0.26705	0.27420	0.29884	0.31862
0.700	0.17787	0.18141	0.18517	0.18779	0.19327	0.21243	0.22804
0.800	0.11146	0.11382	0.11638	0.11814	0.12188	0.13502	0.14593
0.900	0.05267	0.05375	0.05507	0.15602	0.05794	0.07673	0.07036
1.000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

2.5	2	1.75	1.5	1.25	1.125	1.1	1.0
1.93434	1.91018	1.88955	1.85560	1.78515	1.70711	1.56161	1
1.49662	1.50622	1.51223	1.51821	1.51768	1.50065	1.49183	1
1.34043	1.35983	1.37386	1.39231	1.41459	1.41946	1.41709	1
1.13835	1.16821	1.19111	1.22385	1.27366	1.30643	1.31253	1
0.88203	0.92078	0.95180	0.99868	1.07877	1.14558	1.16259	1
0.70311	0.74438	0.77837	0.83143	0.92791	1.01661	1.04121	1
0.56132	0.60189	0.63609	0.69101	0.79605	0.89986	0.93028	1
0.44174	0.47944	0.51194	0.56554	0.67314	0.78679	0.82168	1
0.33697	0.37010	0.39930	0.44879	0.55328	0.67149	0.79098	1
0.24275	0.26980	0.29421	0.33678	0.43182	0.54807	0.58756	1
0.15633	0.17588	0.19395	0.22650	0.30402	0.40845	0.44641	1
0.07587	0.08644	0.09647	0.11521	0.16359	0.23794	0.26782	1
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	..

TABLE 11. $d = \Lambda \sin \lambda = \text{Im. } \zeta_\infty = \text{Im.} \left[a + ib + \sqrt{(a+ib)^2 - 1} \right]$

e	ℓ						
	∞	32	16	12	8	4	3
0.000	∞	22.31552	15.55522	13.33983	10.67357	7.05969	5.81154
0.025	∞	19.32232	13.50690	11.60546	9.32224	6.24312	5.18579
0.050	∞	18.30549	12.80852	11.01271	8.85812	5.95835	4.96525
0.100	∞	17.03680	11.93485	10.26977	8.27426	5.59597	4.68229
0.200	∞	15.51365	10.88161	9.37165	7.56442	5.14739	4.32755
0.300	∞	14.51512	10.18783	9.77815	7.09224	4.84267	4.08287
0.400	∞	13.76585	9.66513	8.32974	6.73343	4.60673	3.89075
0.500	∞	13.16519	9.24452	7.96799	6.44241	4.41194	3.72998
0.600	∞	12.66396	8.89229	7.66431	6.19686	4.24471	3.59008
0.700	∞	12.23416	8.58924	7.40241	5.98405	4.09728	3.46502
0.800	∞	11.85826	8.32332	7.17208	5.79598	3.96475	3.35099
0.900	∞	11.52450	8.08647	6.96646	5.62728	3.84378	3.24536
1.000	∞	11.22462	7.87298	6.78073	5.47418	3.73205	3.14626

2.5	2	1.75	1.5	1.25	1.125	1.0	1.0
5.07113	4.19737	3.67917	3.06711	2.27202	1.70711	1.56161	0
4.56002	3.82195	3.38338	2.86263	2.17584	1.67386	1.54169	0
4.37830	3.68666	3.27574	2.78727	2.13997	1.66193	1.53497	0
4.14359	3.51006	3.13414	2.68708	2.09177	1.64628	1.52656	0
3.84614	3.28243	2.94925	2.55392	2.02627	1.62557	1.51616	0
3.63829	3.11998	2.81515	2.45502	1.97596	1.60978	1.50868	0
3.47311	2.98826	2.70464	2.37158	1.93173	1.59556	1.50206	0
3.33320	2.87438	2.60747	2.29621	1.88978	1.58134	1.49523	0
3.20995	2.77187	2.51838	2.22502	1.84768	1.56576	1.48720	0
3.09836	2.67688	2.43413	2.15531	1.80320	1.54710	1.47652	0
2.99521	2.58683	2.35239	2.08484	1.75361	1.52239	1.46012	0
2.89827	2.49981	2.27125	2.01131	1.69465	1.48497	1.43185	0
2.80588	2.41421	2.18890	1.93185	1.61803	1.41421	1.36504	0

TABLE 12. $a = \dfrac{\sqrt{\ell - e} - \sqrt{(\ell - 1)e}}{\sqrt{\ell - e} + \sqrt{(\ell - 1)e}}$

e	ℓ						
	∞	32	16	12	8	4	3
0.000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.025	0.72695	0.73057	0.73429	0.73680	0.74159	0.75846	0.77047
0.050	0.63451	0.63900	0.64359	0.64672	0.65314	0.67382	0.68903
0.100	0.51949	0.52470	0.53005	0.53370	0.54122	0.56574	0.58401
0.200	0.38197	0.38739	0.39301	0.39685	0.40483	0.43127	0.45142
0.300	0.29222	0.29732	0.30261	0.30626	0.31386	0.33941	0.35925
0.400	0.22515	0.22969	0.23444	0.23771	0.24457	0.26795	0.28642
0.500	0.17157	0.17545	0.17952	0.18234	0.18826	0.20871	0.22515
0.600	0.12702	0.13017	0.13348	0.13579	0.14066	0.15767	0.17157
0.700	0.08893	0.09132	0.09384	0.09560	0.09933	0.11252	0.12348
0.800	0.05573	0.05733	0.05903	0.06022	0.06275	0.07180	0.07945
0.900	0.02633	0.02714	0.02799	0.02859	0.02988	0.04657	0.03852
1.000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

2.5	2	1.75	1.5	1.25	1.125	1.1	1.0
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1
0.78080	0.79774	0.81117	0.83140	0.86667	0.89879	0.90799	1
0.70218	0.72395	0.74137	0.76787	0.81478	0.85830	0.87089	1
0.60000	0.62679	0.64853	0.68211	0.74301	0.80110	0.81818	1
0.46934	0.50000	0.52545	0.56574	0.64174	0.71762	0.74054	1
0.37716	0.40837	0.43480	0.47759	0.56131	0.64853	0.67553	1
0.30334	0.33333	0.35925	0.40213	0.48921	0.58401	0.61414	1
0.24041	0.26795	0.29222	0.33333	0.42020	0.51949	0.55198	1
0.18466	0.20871	0.23036	0.26795	0.35100	0.45142	0.48570	1
0.13394	0.15354	0.17157	0.20378	0.27871	0.37576	0.41011	1
0.08686	0.10102	0.11438	0.13900	0.20000	0.28642	0.31891	1
0.04245	0.05013	0.05757	0.07180	0.11001	0.17157	0.19702	1
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	..

TABLE 13. $b = (1 + a)\sqrt{l - 1}$

e	l							
	∞	32	16	12	8	4	3	2.5
0.000	∞	11.13553	7.74597	6.63325	5.29150	3.46410	2.82843	2.44949
0.025	∞	9.63543	6.71686	5.76032	4.60878	3.04574	2.50383	2.18102
0.050	∞	9.12556	6.36561	5.46156	4.37379	2.89914	2.38864	2.08474
0.100	∞	8.48916	5.92585	5.08671	4.07769	2.71194	2.24014	1.95959
0.200	∞	7.72467	5.39509	4.63284	3.71683	2.47903	2.05261	1.79956
0.300	∞	7.22316	5.04501	4.33238	3.47614	2.31992	1.92226	1.68667
0.400	∞	6.84664	4.78095	4.10504	3.29283	2.19615	1.81928	1.59626
0.500	∞	6.54464	4.56825	3.92137	3.14385	2.09355	1.73262	1.51918
0.600	∞	6.29251	4.38996	3.76700	3.01790	2.00514	1.65685	1.45091
0.700	∞	6.07622	4.23643	3.63370	2.90856	1.92694	1.58883	1.38879
0.800	∞	5.88697	4.10160	3.51634	2.81176	1.85641	1.52657	1.33112
0.900	∞	5.71886	3.98140	3.41146	2.72480	1.79185	1.46869	1.27673
1.000	∞	5.56776	3.87298	3.31662	2.64575	1.73205	1.41421	1.22474

e	l						
	2	1.75	1.5	1.25	1.125	1.1	1.0
0.000	2.00000	1.73205	1.41427	1.00000	0.70711	0.63246	0
0.025	1.79774	1.56852	1.29500	0.93333	0.67132	0.60336	0
0.050	1.72395	1.50807	1.25007	0.90739	0.65701	0.59163	0
0.100	1.62679	1.42767	1.18943	0.87150	0.63678	0.57496	0
0.200	1.50000	1.32108	1.10715	0.82087	0.60727	0.55041	0
0.300	1.40837	1.24258	1.04482	0.78065	0.58284	0.52985	0
0.400	1.33333	1.17714	0.99146	0.74460	0.56003	0.51044	0
0.500	1.26795	1.11910	0.94281	0.71010	0.53722	0.49078	0
0.600	1.20871	1.06552	0.89658	0.67550	0.51315	0.46973	0
0.700	1.15354	1.01461	0.85120	0.63935	0.48640	0.44592	0
0.800	1.10102	0.96508	0.80539	0.60000	0.45482	0.41708	0
0.900	1.05013	0.91588	0.75787	0.55500	0.41421	0.37853	0
1.000	1.00000	0.86602	0.70711	0.50000	0.35355	0.31623	0

TABLE 14. $b\ell/N^2$, $N = (1 + a)\sqrt{e}[(\ell - 1)/(\ell - e)]^{\frac{1}{4}}$

e	ℓ						
	∞	32	16	12	8	4	3
0.000	∞	2.82843	2.00000	1.73205	1.41421	1.00000	0.86602
0.025	∞	3.26750	2.30462	1.99247	1.62112	1.13380	0.97421
0.050	∞	3.44872	2.42989	2.09925	1.70559	1.18738	1.01689
0.100	∞	3.70435	2.60611	2.24922	1.82368	1.26128	1.07508
0.200	∞	4.06458	2.85348	2.45918	1.98803	1.36199	1.15289
0.300	∞	4.33994	3.04182	2.61856	2.11201	1.43610	1.20888
0.400	∞	4.57139	3.19959	2.75175	2.21506	1.49641	1.25344
0.500	∞	4.77475	3.33781	2.86819	2.30472	1.54779	1.29057
0.600	∞	4.95818	3.46215	2.97272	2.38488	1.59278	1.32233
0.700	∞	5.12650	3.57595	3.06822	2.45773	1.63287	1.34990
0.800	∞	5.28284	3.68141	2.15657	2.52486	1.66903	1.37408
0.900	∞	5.42941	3.78005	3.23905	2.58728	1.70193	1.39539
1.000	∞	5.56776	3.87298	3.31662	2.64575	1.73205	1.41421

e	ℓ							
	2.5	2	1.75	1.5	1.25	1.125	1.1	1
0.000	0.79057	0.70711	0.66144	0.61237	0.55902	0.53033	0.52440	0.50000
0.025	0.88343	0.78173	0.72516	0.66315	0.59293	0.55236	0.54341	0.49371
0.050	0.91955	0.81001	0.74875	0.68114	0.60362	0.55794	0.54770	0.48734
0.100	0.96824	0.84733	0.77919	0.70341	0.61525	0.56211	0.55000	0.47434
0.200	1.03215	0.89443	0.81615	0.72820	0.62415	0.55994	0.54505	0.44721
0.300	1.07703	0.92578	0.83926	0.74137	0.62427	0.55097	0.53382	0.41833
0.400	1.11187	0.94868	0.85481	0.74801	0.61909	0.53754	0.51833	0.38730
0.500	1.14012	0.96593	0.86521	0.75000	0.60979	0.52028	0.49910	0.35355
0.600	1.16354	0.97891	0.87160	0.74820	0.59676	0.49921	0.47603	0.31623
0.700	1.18317	0.98842	0.87463	0.74302	0.57997	0.47386	0.44852	0.27386
0.800	1.19964	0.99494	0.87464	0.73456	0.55902	0.44316	0.41528	0.22361
0.900	1.21340	0.99875	0.87177	0.72271	0.53297	0.40511	0.37361	0.15811
1.000	1.22474	1.00000	0.86602	0.70711	0.50001	0.35355	0.31623	0.00000

TABLE 15. u_{cp}

e	ℓ						
	∞	32	16	12	8	4	3
0.000	0	0.08909	0.12702	0.14748	0.18268	0.26795	0.31784
0.025	0	0.07502	0.10698	0.12423	0.15392	0.22596	0.26820
0.050	0	0.06920	0.09869	0.11462	0.14206	0.20873	0.24791
0.100	0	0.06097	0.08699	0.10106	0.12532	0.18446	0.21936
0.200	0	0.04933	0.07044	0.08187	0.10164	0.15016	0.17904
0.300	0	0.04039	0.05772	0.06713	0.08344	0.12372	0.14793
0.400	0	0.03285	0.04699	0.05467	0.06803	0.10127	0.12144
0.500	0	0.02620	0.03750	0.04367	0.05440	0.08129	0.09778
0.600	0	0.02018	0.02891	0.03368	0.04201	0.06303	0.07606
0.700	0	0.01463	0.02098	0.02446	0.03054	0.04603	0.05573
0.800	0	0.00947	0.01359	0.01584	0.01981	0.02998	0.03644
0.900	0	0.00461	0.00661	0.00771	0.00966	0.01469	0.01792
1.000	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

ℓ							
2.5	2	1.75	1.5	1.25	1.125	1.1	1
0.35639	0.41421	0.45685	0.51764	0.61803	0.70711	0.73258	1.00000
0.30089	0.35001	0.38629	0.43812	0.52395	0.60033	0.62221	0.85261
0.27828	0.32398	0.35781	0.40622	0.48663	0.55840	0.57900	0.79656
0.24650	0.28749	0.31795	0.36172	0.43486	0.50058	0.51949	0.72076
0.20165	0.23607	0.26186	0.29924	0.36256	0.42027	0.43702	0.61803
0.16702	0.19631	0.21847	0.25091	0.30670	0.35842	0.37358	0.54058
0.13746	0.16228	0.18124	0.20932	0.25848	0.30501	0.31880	0.47450
0.11100	0.13365	0.14762	0.17157	0.21441	0.25600	0.26851	0.41422
0.08659	0.10324	0.11628	0.13613	0.17256	0.20907	0.22048	0.35639
0.06365	0.07632	0.08639	0.10199	0.13155	0.16245	0.17217	0.29822
0.04175	0.05038	0.05736	0.06839	0.09017	0.11430	0.12214	0.23607
0.02061	0.02505	0.02870	0.03463	0.04701	0.06199	0.06722	0.16228
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

TABLE 16. t_{wp}

e	ℓ						
	∞	32	16	12	8	4	3
0.000	∞	8.88577	6.28319	5.44140	4.44289	3.14159	2.72070
0.025	∞	7.46218	5.26322	4.55028	3.70236	2.58934	2.41337
0.050	∞	6.87460	4.84368	4.18460	3.39990	2.36689	2.02706
0.100	∞	6.04562	4.25327	3.67081	2.97630	2.05846	1.75456
0.200	∞	4.87740	3.42413	2.95096	2.38559	1.63436	1.38345
0.300	∞	3.98425	2.79252	2.40394	1.93892	1.31841	1.10981
0.400	∞	3.23344	2.26316	1.94638	1.56677	1.05845	0.88659
0.500	∞	2.57364	1.79912	1.54598	1.24227	0.83428	0.69563
0.600	∞	1.97847	1.38151	1.18622	0.95163	0.63557	0.52765
0.700	∞	1.43231	0.99910	0.85722	0.68667	0.45620	0.37715
0.800	∞	0.92490	0.64452	0.55264	0.44203	0.29220	0.24055
0.900	∞	0.49425	0.31279	0.26798	0.21402	0.14079	0.11545
1.000	..	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

ℓ							
2.5	2	1.75	1.5	1.25	1.125	1.1	1
2.48365	2.22144	2.00797	1.92383	1.75620	1.66603	1.64747	1.57080
2.01755	1.78529	1.65609	1.51447	1.35411	1.26145	1.24102	1.14781
1.83302	1.61467	1.49252	1.35778	1.20324	1.11217	1.09179	0.97145
1.58021	1.38285	1.27168	1.14800	1.00411	0.91739	0.87276	0.77414
1.23856	1.07330	0.97936	0.87353	0.74897	0.67191	0.65406	0.53665
0.98875	0.84990	0.77047	0.68061	0.57311	0.50581	0.49008	0.38404
0.78645	0.67103	0.60463	0.52909	0.43790	0.38021	0.36662	0.27394
0.61454	0.52065	0.46635	0.40426	0.32869	0.28044	0.26902	0.19056
0.46429	0.39062	0.34780	0.29856	0.23813	0.19920	0.18982	0.12619
0.33056	0.27616	0.24436	0.20760	0.16204	0.13240	0.12547	0.07652
0.21003	0.17419	0.15312	0.12860	0.09787	0.07759	0.07279	0.03914
0.10040	0.08262	0.07213	0.05979	0.04410	0.03350	0.03090	0.01307
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

TABLE 17. C_{L_P}

e	ℓ						
	∞	32	16	12	8	4	3
0.000	1.57080	1.58326	1.59614	1.60496	1.62322	1.68357	1.72948
0.025	2.10680	2.11863	2.13090	2.13930	2.15671	2.21437	2.25835
0.050	2.35182	2.36309	2.37473	2.38272	2.39928	2.45429	2.49636
0.100	2.72134	2.73145	2.74193	2.74913	2.76407	2.81392	2.85229
0.200	3.28992	3.29791	3.30624	3.31196	3.32390	3.36409	3.39537
0.300	3.76276	3.76887	3.77530	3.77971	3.78896	3.82035	3.84509
0.400	4.18603	4.19056	4.19526	4.19855	4.20540	4.22895	4.24777
0.500	4.57764	4.58079	4.58406	4.58637	4.59119	4.60789	4.62142
0.600	4.94674	4.94876	4.95087	4.95236	4.95547	4.96639	4.97537
0.700	5.29880	5.29992	5.30113	5.30198	5.30374	5.31003	5.31526
0.800	5.63736	5.63786	5.63840	5.63878	5.63958	5.64243	5.64485
0.900	5.96489	5.96500	5.96511	5.96524	5.96545	5.96626	5.96681
1.000	6.28318	6.28318	6.28318	6.28318	6.28318	6.28318	6.28318

ℓ							
2.5	2	1.75	1.5	1.25	1.125	1.1	1
1.77031	1.84031	1.89864	1.99170	2.17079	2.35620	2.41381	3.14159
2.29754	2.36490	2.42118	2.51120	2.68503	2.86608	2.92245	3.63832
2.53393	2.59868	2.65292	2.73990	2.90877	3.08515	3.14025	3.84408
2.88668	2.94626	2.99645	3.07740	3.23597	3.40322	3.45576	4.13505
3.42370	3.47327	3.51551	3.58451	3.72236	3.87100	3.91826	4.54656
3.86772	3.90778	3.94235	3.99964	4.11667	4.24615	4.28775	4.86232
4.26512	4.29627	4.32354	4.36944	4.46570	4.57548	4.61149	5.12851
4.63402	4.65698	4.67739	4.71240	4.78810	4.87764	4.90767	5.36304
4.98382	4.99947	5.01363	5.03841	5.09404	5.16296	5.18713	5.57506
5.32025	5.32967	5.33835	5.35392	5.39051	5.43863	5.45588	5.77004
5.64718	5.65167	5.65590	5.66373	5.68312	5.71101	5.72116	5.95152
5.96742	5.96864	5.96981	5.97205	5.97807	5.98781	5.99184	6.12197
6.28318	6.28318	6.28318	6.28318	6.28318	6.28318	6.28318	6.28318

TABLE 18. u_{cQ}

e	ℓ						
	∞	32	16	12	8	4	3
0.000	0	0.17961	0.25820	0.30151	0.37756	0.57735	0.70711
0.025	0	0.15089	0.21643	0.25235	0.31530	0.47624	0.57797
0.050	0	0.13906	0.19935	0.23230	0.28997	0.43649	0.52829
0.100	0	0.12239	0.17530	0.20420	0.25463	0.38191	0.46080
0.200	0	0.09889	0.14158	0.16485	0.20541	0.30724	0.36994
0.300	0	0.08091	0.11583	0.13487	0.16804	0.25129	0.30248
0.400	0	0.06577	0.09418	0.10968	0.13670	0.20463	0.24651
0.500	0	0.05243	0.07511	0.08750	0.10912	0.16367	0.19745
0.600	0	0.04037	0.05819	0.06743	0.08416	0.12657	0.15301
0.700	0	0.02927	0.04198	0.04895	0.06115	0.09225	0.11181
0.800	0	0.01894	0.02717	0.03170	0.03964	0.06002	0.07297
0.900	0	0.00921	0.01323	0.01545	0.01933	0.02939	0.03586
1.000	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

ℓ							
2.5	2	1.75	1.5	1.25	1.125	1.1	1
0.81650	1.00000	1.15470	1.41421	2.00000	2.82842	3.16228	∞
0.66169	0.79774	0.90808	1.08436	1.44445	1.88721	2.03055	∞
0.60327	0.72395	0.82067	0.97300	1.27520	1.62282	1.74200	∞
0.52489	0.62678	0.70742	0.83236	1.07256	1.33589	1.42304	∞
0.42043	0.49966	0.56227	0.65735	0.83485	1.02086	1.08037	∞
0.34362	0.40836	0.45884	0.53554	0.67708	0.82254	0.86836	∞
0.28021	0.33333	0.37479	0.43781	0.55397	0.67259	0.70974	∞
0.22475	0.26795	0.30180	0.35355	0.42626	0.54786	0.57875	∞
0.17448	0.20871	0.23575	0.27740	0.35561	0.43725	0.46321	∞
0.12781	0.15354	0.17576	0.20612	0.26779	0.33372	0.35487	∞
0.08365	0.10101	0.11508	0.13742	0.18181	0.23163	0.24805	∞
0.04124	0.05013	0.05745	0.06935	0.09423	0.12442	0.13504	∞
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	••

TABLE 19. C_{D_Q}

e	ℓ						
	∞	32	16	12	8	4	3
0.000	1.57080	1.60860	1.64851	1.67633	1.73529	1.94402	2.11816
0.025	1.11334	1.13218	1.15202	1.16573	1.19442	1.29304	1.37201
0.050	0.94685	0.96047	0.97475	0.98458	1.00515	1.07507	1.13030
0.100	0.73442	0.74262	0.75114	0.75701	0.76923	0.81034	0.84226
0.200	0.47999	0.48348	0.48711	0.48961	0.49476	0.51191	0.52501
0.300	0.32131	0.32288	0.32450	0.32560	0.32792	0.33553	0.34128
0.400	0.21220	0.21287	0.21359	0.21407	0.21508	0.21838	0.22087
0.500	0.13475	0.13502	0.13532	0.13551	0.13591	0.13724	0.13825
0.600	0.07981	0.07990	0.08000	0.08007	0.08021	0.08068	0.08104
0.700	0.04191	0.04192	0.04196	0.14197	0.04202	0.04215	0.04225
0.800	0.01751	0.01751	0.01752	0.01752	0.01753	0.01755	0.01757
0.900	0.00413	0.00414	0.00414	0.00414	0.00414	0.00414	0.00414
1.000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

ℓ							
2.5	2	1.75	1.5	1.25	1.125	1.1	1
2.28547	2.60258	2.89991	3.44970	4.85403	7.06857	8.00568	∞
1.44510	1.57690	1.69289	1.89041	2.31158	2.79230	2.94561	0
1.18076	1.27027	1.34747	1.47519	1.73029	1.98926	2.06239	0
0.87100	0.92090	0.96286	1.02965	1.15214	1.25483	1.27737	0
0.53242	0.55480	0.57215	0.59622	0.63465	0.65497	0.65507	0
0.34631	0.35471	0.36131	0.37093	0.38395	0.38513	0.38177	0
0.22303	0.22658	0.22931	0.23307	0.23705	0.23381	0.23062	0
0.13911	0.14052	0.14154	0.14293	0.14373	0.14042	0.13817	0
0.08134	0.08183	0.08217	0.08259	0.08241	0.08030	0.07894	0
0.04233	0.04246	0.04256	0.04265	0.04192	0.04139	0.04074	0
0.01758	0.01760	0.01762	0.01763	0.01754	0.01719	0.01700	0
0.00414	0.00414	0.00414	0.00415	0.00415	0.00410	0.00407	0
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0

TABLE 20. C_{L_Q}

e	ℓ						
	∞	32	16	12	8	4	3
0.000	1.57080	1.60860	1.64851	1.67633	1.73529	1.94402	2.11816
0.025	2.10680	2.14265	2.18026	2.20693	2.26138	2.45246	2.60841
0.050	2.35182	2.38577	2.42146	2.44606	2.49811	2.67776	2.82329
0.100	2.72134	2.75180	2.78374	2.80579	2.85227	3.01198	3.14065
0.200	3.28992	3.31383	3.33919	3.35652	3.39680	3.51929	3.62027
0.300	3.76276	3.78113	3.80055	3.81390	3.84207	3.93907	4.01713
0.400	4.18603	4.19946	4.21382	4.22368	4.24451	4.31658	4.37492
0.500	4.57764	4.58689	4.59699	4.60402	4.61844	4.66916	4.71064
0.600	4.94674	4.95270	4.95916	4.96334	4.97309	5.00599	5.03329
0.700	5.29880	5.30215	5.30582	5.30827	5.31363	5.33258	5.34838
0.800	5.63736	5.63870	5.64049	5.64162	5.64434	5.65258	5.65986
0.900	5.96489	5.96497	5.96563	5.96594	5.96660	5.96864	5.97060
1.000	6.28318	6.28318	6.28318	6.28318	6.28318	6.28318	6.28318

ℓ							
2.5	2	1.75	1.5	3.25	1.125	1.1	1
2.28547	2.60258	2.89991	3.44970	4.85403	7.06857	8.00568	∞
2.75497	3.02517	3.26682	3.70417	4.71736	6.08410	6.61478	∞
2.95930	3.20817	3.43193	3.82281	4.71399	5.88091	6.30757	∞
3.26009	3.47721	3.67033	4.00395	4.74528	5.67900	6.01045	∞
3.71341	3.88270	4.03312	4.28961	4.84906	5.53182	5.76817	∞
4.08625	4.22105	4.33756	4.53708	4.97155	5.49803	5.67892	∞
4.42934	4.52867	4.61718	4.76980	5.10515	5.51411	5.65491	∞
4.74961	4.82127	4.88577	4.99821	5.24955	5.56173	5.67031	∞
5.05910	5.10720	5.15108	5.22867	5.40691	5.63494	5.71475	∞
5.36349	5.38951	5.41862	5.46647	5.58046	5.73351	5.79616	∞
5.66691	5.68043	5.69325	5.71695	5.77637	5.86223	5.89461	∞
5.97251	5.97609	5.97957	5.98639	6.00421	6.03742	6.04623	∞
6.28318	6.28318	6.28318	6.28318	6.28318	6.28318	6.28318	..

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